



# StepNCount

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**Mobile Computer in Biomedical Engineering Course**

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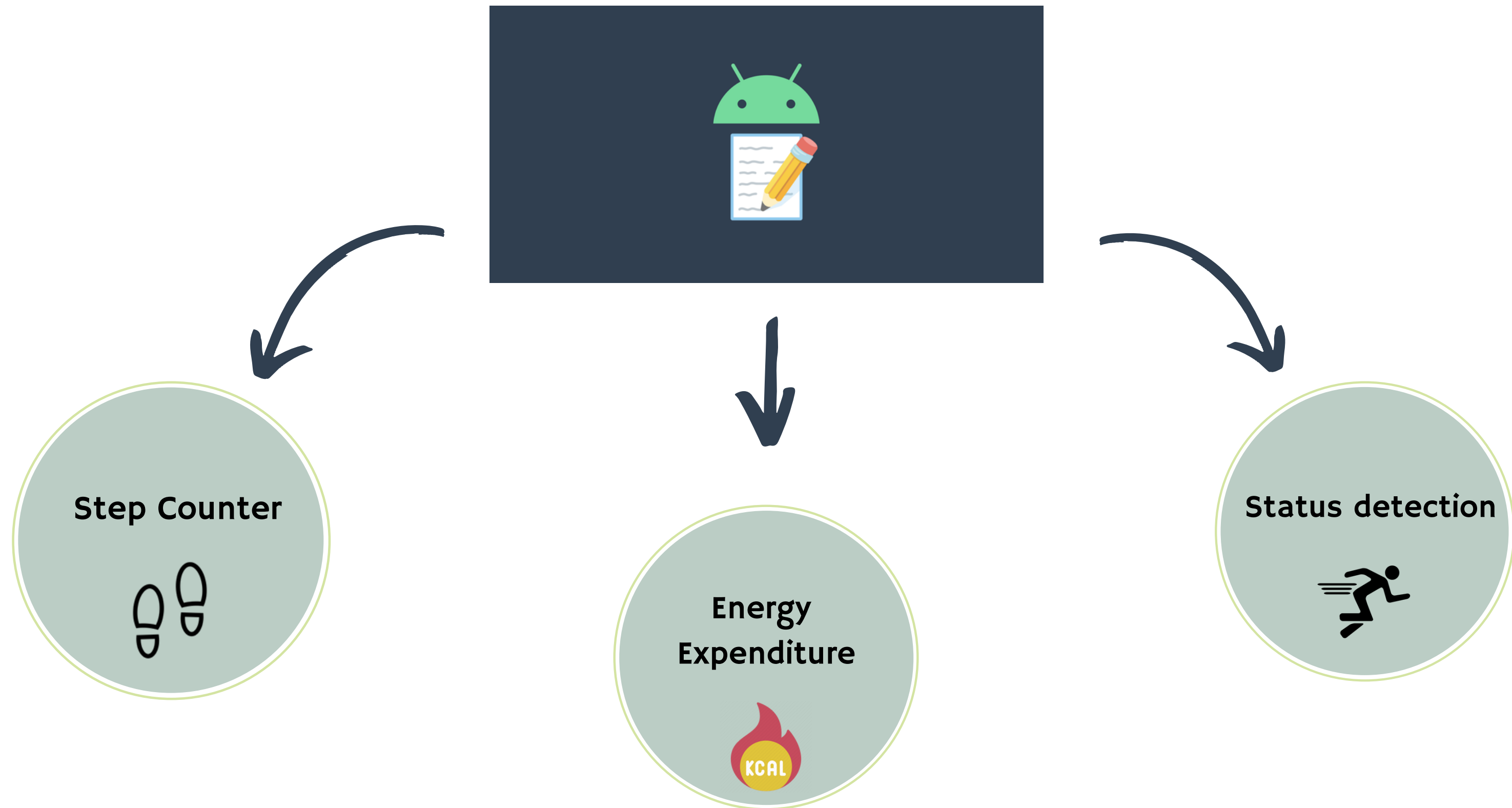
# Presentation content

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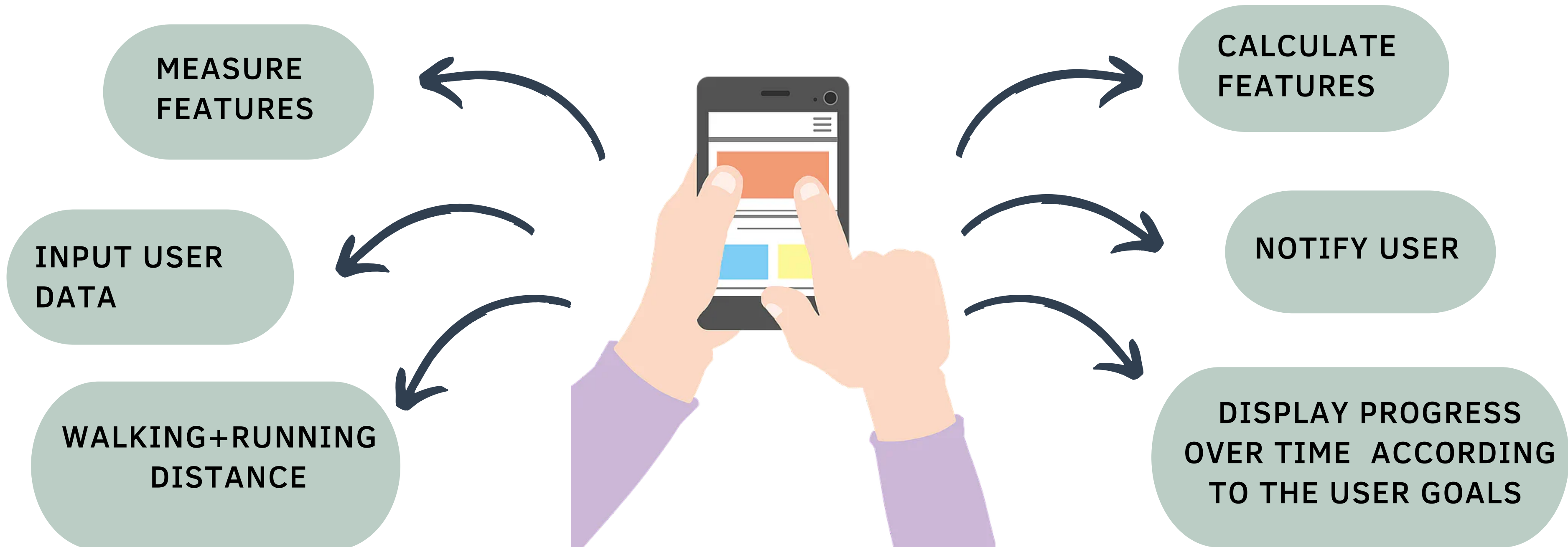


- App goals
- Functionalities
- Vital Jacket
- Step counter/Status Detection  
/Energy Expenditure
- App Current status
- Next Steps

# App goals



# Functionalities





# Vital Jacket



Full ECG stream

Tri-axial accelerometer (X,Y,Z) data

Battery level

RTC time code

Pushbutton event

Radio event

Device ID

Timestamp

Set / Get accelerometer sensibility

SD Card status

# Step counter/Status Detection/E.Expenditure

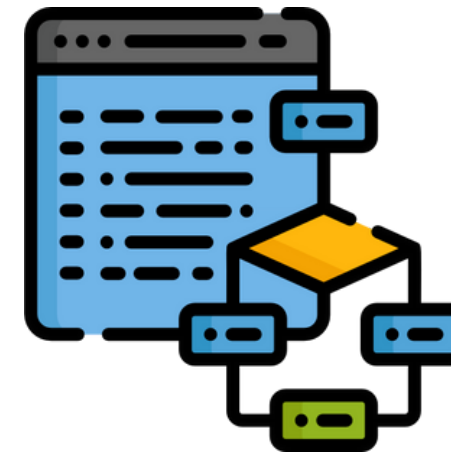


Get Accelerometer data:

Acceleration along X-Axis

Acceleration along Y-Axis

Acceleration along Z-Axis



Get the magnitude of the 3-D acceleration data:

$$\text{magnitude} = \sqrt{x\_acceleration^2 + y\_acceleration^2 + z\_acceleration^2}$$

Get the difference in this magnitude from the previous value. If this value is greater than a particular threshold value then increment the steps count.

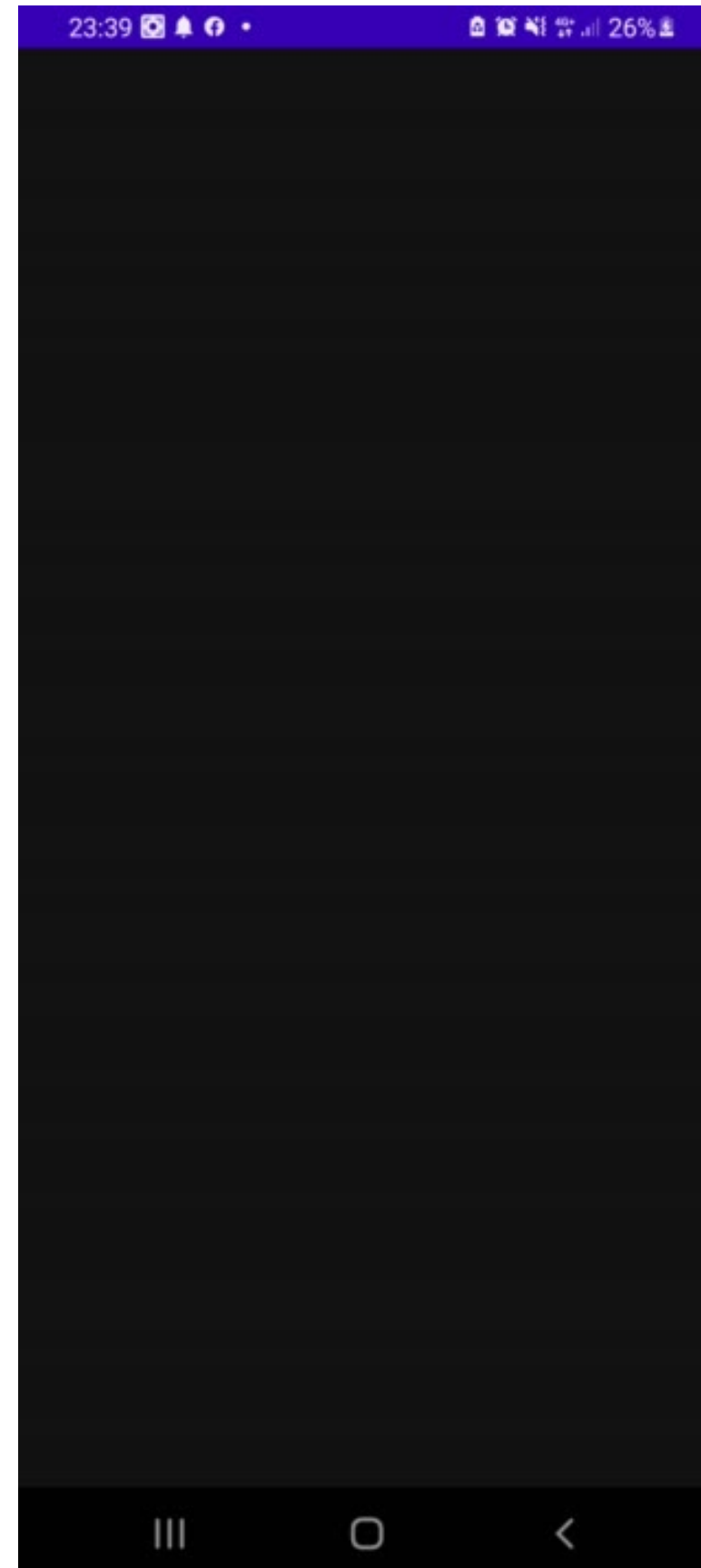
- Threshold for walking = 17.5
- Threshold for running = 30

$$\text{Kcals/min} = 0.001064 \times \text{Magnitude} + 0.087512(\text{Body Mass}) - 5.500229$$

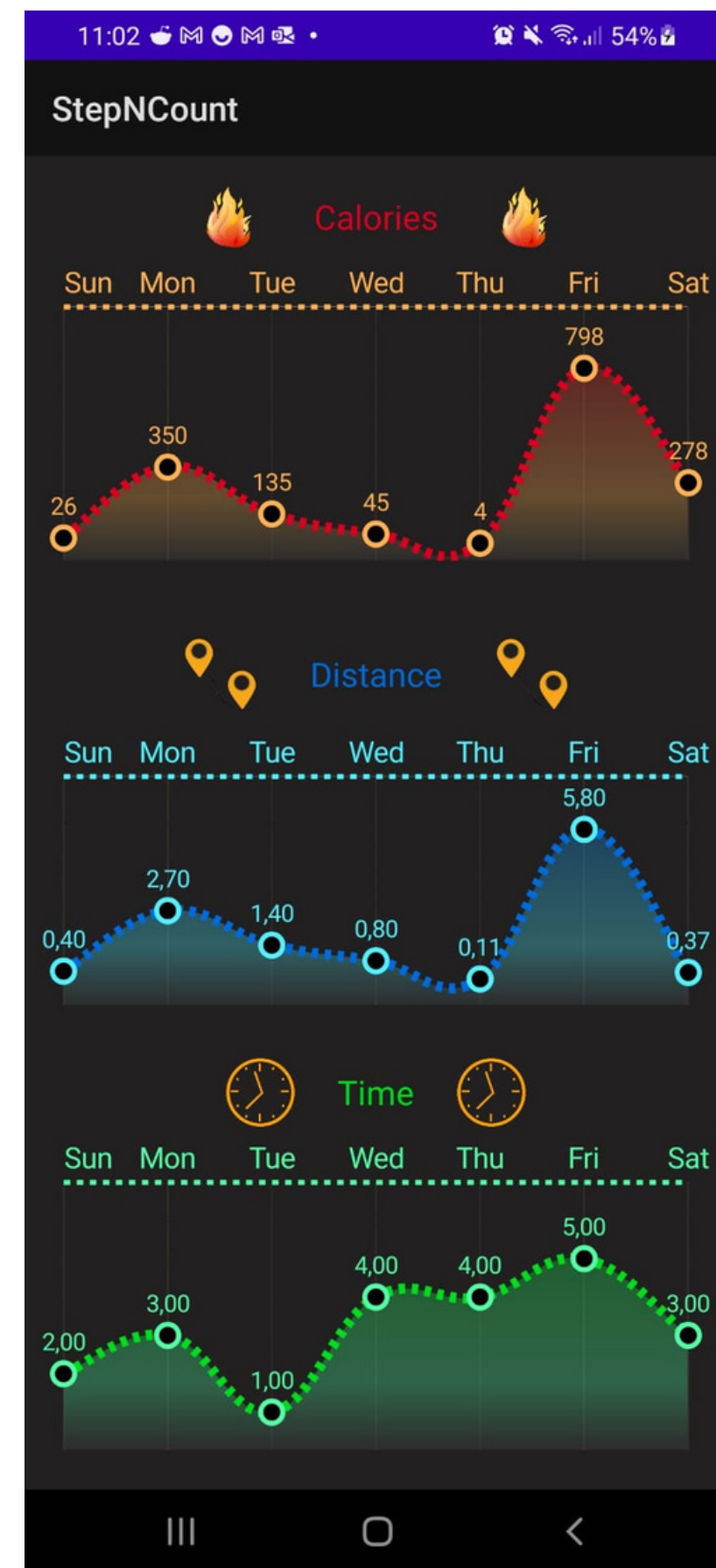
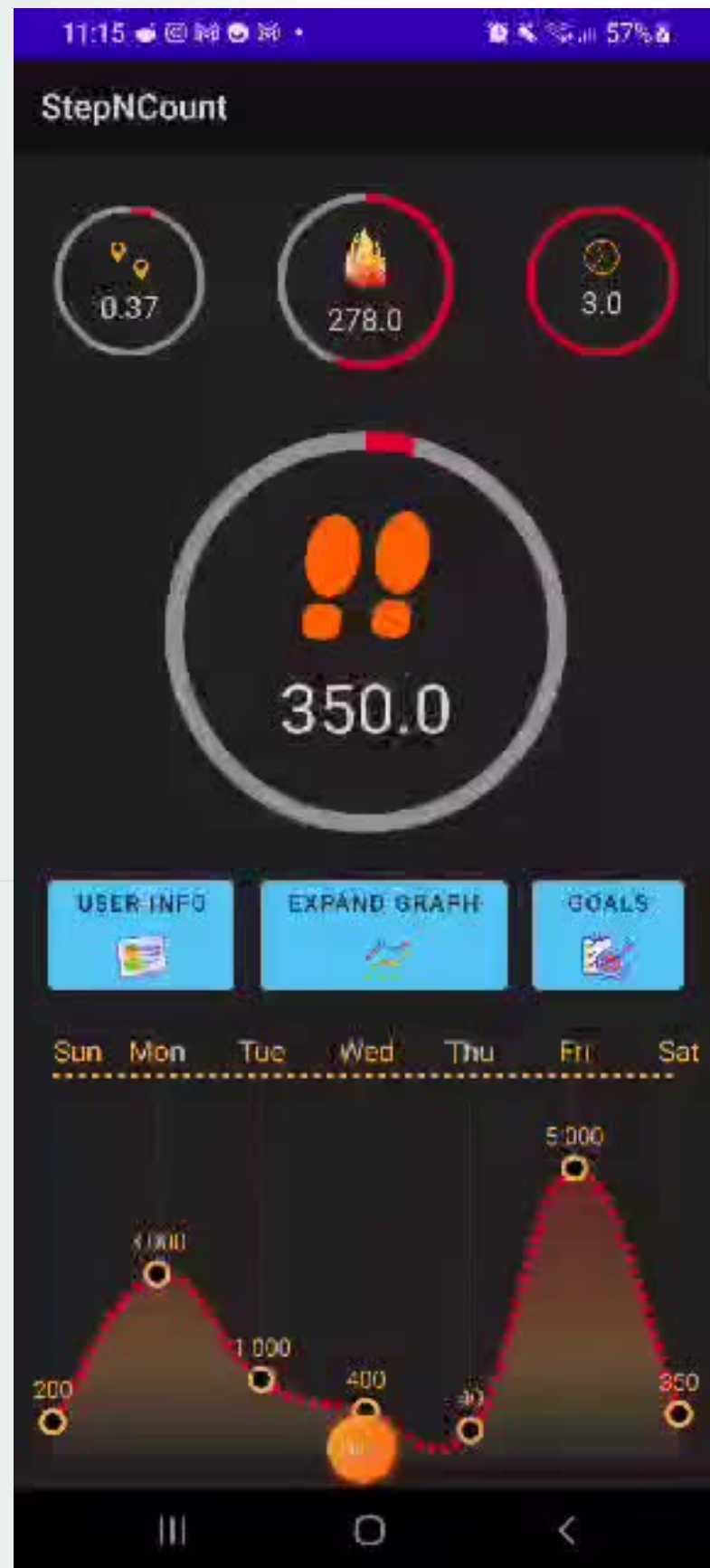


# App Current status

- Bluetooth Connection Screen
- Configuration Screen
- Goals Screen
- Main Screen
- Results Screen







App Current status



# Next steps

- Database integration
- Notification Implementation when the user achieves the defined goals
- Acquisition as a background thread
- Improve sensibility of status detection
- Add distance feature



# References

- programmerworld. (2019) *How to create walking step counter App using Accelerometer sensor and Shared Preference in Android?* Available at: <https://programmerworld.co/android/how-to-create-walking-step-counter-app-using-accelerometer-sensor-and-shared-preference-in-android/> (Accessed: 7 November 2022).
- ActiGraph (2018), *What is the difference among the Energy Expenditure Algorithms?* Available at: <https://actigraphcorp.my.site.com/support/s/article/What-is-the-difference-among-the-Energy-Expenditure-Algorithms> (Accessed: 7 November 2022).

# Thank you for your attention!



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